

Needs Analysis for the Development of Content and Language Integrated Learning-Based Learning Modules in Civil Engineering Programs

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Abstract

Focusing on oral communication skills, this paper investigates the requirement of creating a CLIL-based English teaching module for Civil Engineering students at Universitas Pancasakti Tegal. Including English for Specific Purposes (ESP) into the curriculum becomes crucial as globalization expects engineering graduates to be competent in both technical expertise and English communication. By means of needs analysis, this study investigates important facets like learning objectives, language difficulties, curriculum integration, instructional module structure, and successful learning methodologies. Results show that although teachers deal with issues in resource availability and student involvement, students struggle with technical vocabulary, fluency, and structured oral communication. Still, chances present themselves through interactive learning techniques that improve students' competency including technical talks, project-based learning, and multimedia tools. To guarantee that students acquire the required oral communication skills for academic and professional success, the study suggests a CLIL-based teaching module combining engineering knowledge with communicative language exercises.

Keywords: CLIL, ESP, Civil Engineering, Oral Communication, Technical Terminology, Instructional Module.

Introduction

Emerging in Europe in the 1990s, Content and Language Integrated Learning (CLIL) is characterized as "an educational approach in which subjects [content] are taught through a foreign language" to students at all educational levels (Dalton-Puffer, 2007, p. 1). Bilingual

education depends much on the communicative method (Hüttner & Smit, 2014). Within English for Specific Purposes (ESP), teachers must have multidisciplinary knowledge to satisfy particular demands of their students, therefore stressing the significance of including linguistic and subject knowledge (Luo & Garner, 2017). Although their academic background is not immediately relevant to ESP, this multidisciplinary need forces teachers to learn new subject-related knowledge in English. While ESP courses are sometimes seen as conventional language courses lacking a direct disciplinary or communicative grounding, CLIL is considered as a natural language and communication learning environment inside academic subjects.

Particularly in foreign language acquisition, academic study has focused much on the efficacy of CLIL. Comparatively to conventional foreign or second language (FL/SL) programs (Dalton-Puffer, 2008; Lorenzo et al., 2010), prior research usually show good reception of CLIL techniques, notably at primary and secondary school levels. Research results show how CLIL helps to raise students' second language (L2) acquisition motivation and performance. Enhanced linguistic exposure (Bruton, 2011; Küppers & Trautmann, 2013; Paran, 2013); authentic learning materials; the presence of native speakers (Wolff, 2007); and real-world teaching and learning opportunities (Dalton-Puffer, 2007).

Universitas Pancasakti Tegal's Civil Engineering department needs an English curriculum specifically fit for their disciplinary requirements. Learning English through a specific framework like English for Specific Purposes (ESP) becomes crucial since students in this area have to interact with technical tools, manuals, and worldwide research. Based on CLIL, this study marks the first phase—that of requirements analysis—in the creation of an English instructional module for Civil Engineering students.

Further research shows that students in CLIL surroundings often show good academic achievement (Dalton-Puffer, 2008; Lorenzo et al., 2010). Usually displaying a favorable association between CLIL interventions and learning motivation, these students are more academically capable and motivated (Bruton, 2011; Küppers & Trautmann, 2013; Paran, 2013). Still, there are numerous difficulties applying CLIL notwithstanding these advantages. First, however longterm research remain rare, numerous intervention studies in FL/SL settings find favorable results by comparing CLIL and non-CLIL classrooms in the short term (Pérez-Cañado, 2012). Lack of long-term studies has attracted criticism and calls for more solid research on

how CLIL affects L2 learning ability (Dalton-Puffer, 2008, 2011; Pérez-Cañado, 2012; Ruiz de Zarobe, 2011).

Second, whereas many studies have looked at CLIL's performance in general FL/SL environments, research on its use in ESP is conspicuously lacking. Unlike generic FL/SL learning, ESP is customized to fit students' demands in certain academic or professional domains, thereby necessitating more specialized usage of English (Arifani et al., 2023). Consequently, the integration of CLIL in ESP offers special opportunities and problems that need more research.

Furthermore, studies show that in CLIL environments the roles and obligations of subject and language teachers are sometimes not apparent. Kim and Lee looked at the experiences of two English for Academic Purposes (EAP) teachers at a Korean university who were obliged to teach English for Specific Purposes (ESP) courses in response to global internationalization trends after the institution decided to use English as a Medium of Instruction (EMI). This emphasizes how difficult CLIL implementation is, especially in ESP where cooperation between subject and language teachers is vital but still a topic needing more research.

Considering these gaps in the literature, this study is to investigate, based on CLIL, the demands for creating English instructional materials for Civil engineering students at Universitas Pancasakti Tegal. The study aims to provide insights on the construction of efficient CLIL-based instructional materials that fit the technical and communicative needs of Civil engineering education by spotting the particular language and content-related requirements in this subject.

CLIL for ESP and Oral Communication

Content and Language Integrated Learning, or CLIL, outlines the learning-teaching process whereby content of subjects in all the levels of education is transferred in a foreign language to the students of all the levels of education (Dalton-Puffer, Nikula, & Smit, 2010, pp. 1–2). Since the early 1990s, this genre has evolved inside European educational systems (Dalton-Puffer, 2007). Thus, most nations aim to use and implement CLIL in their educational system since it offers benefits and demand in the application of it.

Regarding CLIL and ESP, the two strategies are mutually advantageous whereby the integration of subject matter knowledge and language learning develops learners' interactively/cognitively and orally oriented capabilities (Huñttner & Smit, 2014; Perez & Canado, 2017). While learning both topic and language, CLIL teaches major courses including science or history through a foreign language. ESP meets the very specialized language needs of students in the specified areas since it is focused on teaching and learning English in connection to particular vocational/occupational domains. It is important since both CLIL and ESP have as their shared objective the development of the communicative competency, which in turn relates to the competency in utilizing language in many communicative contexts. Thus, CLIL and ESP guarantee that students are provided with a set of abilities that will enable them to communicate in the professional realm connected to their fields of study and help to integrate both subject and language and guarantee that learners are equipped.

These features lead this study to derive the concept of oral competence in ESP by means of Brown's (2001) and Richards's (2008) notion of oral competence. Oral competency in EFL terms refers to the degree of the student's capacity to meaningfully interact with the target language of instruction combining various elements. The last personal competency is the capacity to interact with the other speaker and respond to them appropriately. Pronunciation guarantees appropriate enunciation; lexis, which denotes the sophistication of the language used; syntax, which is the proper formulation of the sentence; and finally smoothness, the capacity to speak without much stammering. Oral competency in the second language requires not only the subject understanding but also the pragmatic application method (Brown, 2001; Richards, 2008).

Regarding the second aspect of oral competency in relation to CLIL for ESP, learners' linguistic effectiveness in various academic or professional settings takes front stage. This competency thus consists not only in the right use of certain technical terms but also in the language proficiency and competency in using them occasionally in reference to a certain field. Social competency in using language in that particular field is also involved. Including language and content in CLIL also means that communicative competency here also entails the ability to comprehend as well as express subject matter concepts, engage in topic-based discussions, and write topic based professional or academic papers (Coyle, Hood, & Marsh, 2010; Huñttner

& Smit, 2014). By doing this, the suggested strategy aims to give students integrated functional and content practice as well as the required degree of English for successful communication in their fields of knowledge.

Previous research on CLIL in ESP context

Many academics have created previous studies on CLIL in ESP. Emphasizing higher education, Arnó-Macià and Mancho-Barés (2015), Kung (2018), Lee (2021), Whittaker & McCabe (2019), and Nguyen & Yen Trang (2022) address the features and consequences of CLIL in higher education. In a Catalanian institution, Arnó-Macià and Mancho-Barés (2015) look at ESP to CLIL and find that the lack of clear directions and absence of language assistance in CLIL disciplines demand synergy between content and language professors to effectively address students' demands. Kung (2018) looks at the difficulties CLIL practitioners in Taiwan experience—including English elitism, less language inventiveness, and poor pre-service training—including Emphasizing that hurdles include teachers' confidence and past experience despite their positive attitudes toward CLIL, Lee (2021) investigates CLIL implementation training for new practitioners in Asia. Whittaker and McCabe (2019) concentrate on the cognitive evaluation function in CLIL students' texts, so implying that explicit attention to evaluation may help students acquire cognitive discourse ability, unlike Ying Li et al. (2018), which highlights CLIL students' use of evaluation in communication. Examining the effect of CLIL on ESP students in Vietnam, Nguyen and Yen Trang (2022) find that CLIL raises students' particular content knowledge and confidence. To raise CLIL and ESP teaching in higher education, these research underline the requirement of explicit rules, teacher cooperation, training, and assessment language.

Studies by Arifani et al. (2024), Poedjiastutie et al. (2021), and Arham & Akrib (2018) in the Indonesian setting cover many aspects of English instruction there. By means of the RAIS framework, Arifani et al. (2024) examine the fulfillment of situational authenticity in TBLT, pointing up issues such teachers' ignorance of the framework and inadequate attention to cooperation during online TBLT activities. This paper shows that RAIS framework realization differs in learning situations and shows clear variations in situational authenticity and assessment. Examining socio-cultural impediments to English instruction in Pemana Island, East Nusa Tenggara, Poedjiastutie et al. (2021) find as main obstacles economic conditions,

community beliefs, and curriculum mismatches. Arham and Akrab (2018) evaluate CLIL's feasibility in higher education, noting that lecturers' views determine how much it affects teaching methods and student involvement. These studies taken together highlight the difficulties of English language teaching in Indonesia, including content-language integration for educational development, framework enhancement, and socio-cultural concerns involving improvement of the language.

Regarding ESP, issues in ELT have been covered by both Indonesian and foreign academics like Arifani et al. (2024), Poedjiastutie et al. (2021), Arham & Akrab (2018), Arnó-Macià & Mancho-Barés (2015), Kung (2018), Lee (2021), Whittaker & McCabe (2019), and Nguyen & Yen Trang (2022). While Poedjiastutie et al. (2021) concentrate on socio-cultural challenges including economic considerations and curricular mismatches, Arifani et al. (2024) address issues with instructors' awareness of RAIS frameworks and collaboration in online TBLT activities in Indonesia. Research on CLIL's use in tertiary institutions are still rare; Arham and Akrab (2018) find that CLIL affects professors' attitudes and will to include it within their courses.

Additionally revealing important insights on ESP and CLIL are foreign studies. Emphasizing the requirement of explicit rules and improved L2 support in CLIL courses, Arnó-Macià and Mancho-Barés (2015) look at the change from ESP to CLIL in a Catalanian institution. Investigating CLIL practitioners' experiences in Taiwan, Kung (2018) finds obstacles including English elitism, tensions between formality and flexibility, and poor pre-service training. Lee (2021) talks on CLIL training for Asian new practitioners, pointing out that implementation depends much on teacher confidence and expertise. With an eye toward developing cognitive-discourse competency necessary for ESP students, Whittaker & McCabe (2019) focus on cognitive-discourse evaluation in CLIL student texts. According to Nguyen and Yen Trang (2022), CLIL raises the sector-specific topic knowledge and self-efficacy of ESP students.

These investigations highlight ELT's intricacy and CLIL's and ESP's interconnection. To improve ESP instruction in higher education, they underline the need of explicit rules, teamwork, teacher preparation, and incorporation of evaluative language. Dealing with these elements can result in a better ordered language education program that satisfies professional requirements of the pupils.

Methods

Inspired by Lodico et al. (2006), the study consists in nine steps. The researcher first chooses a precise, quantifiable study topic and develops research questions. To grasp the issue and current research, second a review of the literature is done. Thirdly, the researcher specifies their degree of participation with the subjects and their role. Fourth, good relationships and material preparation help to control entrance onto the field. Fifth, participants—one Civil engineering instructor and one English lecturer—are chosen depending on pertinent backgrounds. Sixth, foreshadowing questions are used to direct data collecting. Seventh, data is obtained by means of document analysis of the curriculum, English course plans (RPS), and past learning outcomes for Civil engineering as well as interviews with ESP language specialists and Civil engineering experts. Eighth, organizing, classifying, and analyzing qualitative results helps one to analyze the gathered data. Eventually, data reduction, data display, and drawing conclusion help to clearly, credibly, and replicably understand and convey results.

Results and Discussion

1) *Learning Objectives Related to CLIL-Based ESP for Civil Engineering Students*

Examining the Civil Engineering curriculum at Universitas Pancasakti Tegal and the English course outline exposes a notable discrepancy in the development of oral communication skills vital for engineering environments. With little attention paid to speaking and listening—which are vital for technical conversations, professional presentations, and office communications—the curriculum mostly stresses reading and writing. Both Lecturer 1 and Lecturer 2 noted that student's capacity to participate in technical briefings, cooperative problem-solving, and worldwide professional contacts is limited by their great trouble articulating engineering concepts in English.

These results fit studies stressing the need of discipline-specific language education in English for Specific Purposes (ESP). According to Kuteeva and Airey (2014), ESP courses should be customized to the particular language requirements of various academic fields, therefore guaranteeing that the materials satisfy students' particular needs. In engineering, this calls for the combination of speaking and listening elements reflecting actual professional communication. Furthermore, emphasized by Hyland (2015)

and Bruce (2021) are the rhetorical and discourse rules of the learners' areas, which go beyond writing ability to oral competence and therefore reflect good professional engagement of mastery of both forms.

Furthermore, underlined by Wu and Badger (2019) is the importance of ESP teachers creating plans that handle foreign materials while guaranteeing curricular relevance for specialized sectors. In this sense, by including language learning inside engineering-specific settings, Content and Language Integrated Learning (CLIL) offers a possible remedy. The lack of organized speaking opportunities in the present syllabus emphasizes the need of instructional redesign to improve technical literacy and communicative competency.

Both professors advocate for task-based speaking events using real industry-related information to close this divide. Particularly in engineering, where students must move from theoretical knowledge to practical communication skills, task-based techniques have been extensively acknowledged as successful in ESP settings (Wu & Badger, 2019). Li and Wang (2022) further claim that task-based speaking activities—especially those aided by technology—help students to participate in actual technical communication, so improving their capacity to clearly and effectively express difficult ideas.

Notwithstanding these benefits, the Civil Engineering program does not now have a disciplined framework for fostering speaking proficiency in technical environments. To create speaking-intensive learning activities including technical presentations, role-playing professional dialogues, and English participation in engineering project discussions, Lecturer 2 emphasizes the need of cooperation between English instructors and engineering professors. Bruce (2021) and Anthony (2018) who underline that task-based speaking activities are crucial in preparing students for professional engineering communication, including design reviews, project meetings, and team-based problem-solving tasks, support this point of view.

Including CLIL within the ESP program offers chances as well as difficulties for improving oral communication abilities. Although studies show CLIL improves discipline-specific communication abilities for Civil engineering students, its efficacy depends on matching language training with technical material (Banegas, 2021). Airey (2016) also points out that CLIL can greatly increase students' capacity for oral communication in

technological environments; but, effective use depends on addressing issues with curriculum design and teacher collaboration.

The main obstacle both professors see is the lack of multidisciplinary training for English teachers, which makes it difficult for them to lead students in precisely pronouncing technical phrases and clearly expressing engineering ideas. Banegas (2022) emphasizes even more how difficult it is for technical fields to apply CLIL with limited resources and poor teacher preparation. This difficulty, however, also offers a chance to include oral communication skills into current engineering courses and industry-based projects so that students might replicate professional situations, provide technical reports, and participate in peer reviews.

In addition to improving students' English competency, a well-organized CLIL-based ESP program with a strong oral communication component would increase their technical fluency and professional preparedness for worldwide engineering workplaces. This is consistent with the larger point of view that, when properly combined, CLIL closes the gap between technical knowledge and language acquisition therefore guaranteeing that students develop the communication competency required for success in professional engineering environments.

2) *Technical vocabulary and linguistic features in English for Civil engineering students*

Universitas Pancasakti Tegal's Civil Engineering program is meant to help students become experts in Civil, energy conversion, materials, and industrial technologies. But a review of curriculum materials and interviews with Lecturer 1 and Lecturer 2 expose a notable discrepancy: oral communication abilities in technical English are not clearly included into the current courses. This result aligns with Anthony (2018), who contends that although oral communication is vital in professional environments including presentations, meetings, and group projects, ESP courses in technical disciplines sometimes ignore it.

One important finding of this study is that although students struggle with pronunciation, fluency, and English language competence to communicate engineering topics, they are rather familiar with technical language. Lecturer 1 points out that students' inability to participate in professional conversation is limited by their frequent

mispronunciation of certain technical words and trouble building cogent arguments. This is consistent with Kuteeva and Airey (2014), who underline that, despite good technical vocabulary, engineering students often struggle with oral communication because of inadequate preparation on real-world speaking assignments. Moreover, Lecturer 2 underlines that, in technical presentations, professional conversations, and discussions—all of which are vital abilities in worldwide engineering environments—students often lack confidence. Bruce's (2021) claim that engineering students generally lack confidence in public presentations and professional interactions is supported by this observation, therefore underlining the need of ESP courses giving speaking skills top priority alongside technical knowledge.

From a language standpoint, these challenges mostly result from students' low exposure to spoken technical English in academic environments, therefore affecting their capacity to speak professionally. Wu and Badger (2019) claim that both of which are crucial for technical descriptions and formal reports, engineering students frequently struggle with the pronunciation of technical terminology and the use of passive voice. In same vein, Kuteeva and Airey (2014) note that students often depend on direct translation from their native tongue, which leads to grammatical mistakes and odd phrasing while trying to explain Civil ideas. These language difficulties as noted in the current study point to a more general problem with ESP education that calls for a more ordered and communicative method of technical English learning.

Task-based activities and real-world resources are absolutely necessary to improve students' oral competency in technical English. To expose students to real-world industry-specific terminology, Anthony (2018) and Belcher (2012) support including engineering manuals, instructional films, and technical talks within ESP courses. Task-based speaking activities—such as simulated industry meetings, oral project reports, and troubleshooting explanations—also help to close the theoretical knowledge gap with practical application (Bruce, 2021; Basturkmen, 2015). These techniques would let students hone their technical speaking abilities in reasonable professional settings.

Furthermore, evaluation techniques inside a CLIL-based ESP program should strike a balance between fluency and correctness to guarantee the development of oral communication. Bruce (2021) and Basturkmen (2015) underline how important structured

speaking assessments—technical presentations and project-based evaluations—are for gauging students' capacity to properly convey technical material. While Lecturer 2 advises group projects requiring students to discuss engineering solutions in English, Lecturer 1 advocates running organised oral exams on engineering subjects. These techniques could be included into basic Civil engineering courses, such Civil system analysis and machine design, so guaranteeing that students simultaneously utilize their technical knowledge and language abilities.

Although including CLIL-based methods into ESP education clearly has benefits, it also creates pedagogical difficulties. Teaching ESP inside a CLIL framework, Morton (2016) points out, puts more pressure on teachers who have to balance language instruction with the delivery of advanced technical content. Many technical sector teachers might not have formal language pedagogy training, hence it might be challenging to apply successful ESP techniques. Moreover, Hyland (2015) contends that since written communication is sometimes regarded as more important for academic and professional success, ESP courses in technical areas typically give reading and writing abilities top priority over speaking. This institutional inclination toward writing competency could impede initiatives to improve oral communication instruction inside ESP programs even further.

3) *Difficulties and Possibilities for Including CLIL into Civil Engineering ESP Curriculum*

Particularly in oral communication training, Content and Language Integrated Learning (CLIL) creates major difficulties when included into the English for Specific Purposes (ESP) curriculum for Civil Engineering at Universitas Pancasakti Tegal. The main challenges are the limited English competency of engineering lecturers and the lack of technical knowledge among language teachers, therefore impeding the efficient development of students' verbal communication skills. The literature is well-documented on this difficulty; Zhang and Liu (2020) and Coyle et al. (2010) show that in CLIL environments, such knowledge gaps often hinder multidisciplinary collaboration. Furthermore, curriculum study shows that current English classes focus more on writing than on oral communication, which helps to explain why students find it difficult to clearly state engineering ideas (Flowerdew, 2012).

Notwithstanding these difficulties, multidisciplinary cooperation offers good chances to improve oral communication abilities. Team-teaching—in which English and engineering lecturers co-design and co-teach modules integrating both linguistic and technical goals—offers a potential method (Pérez-Cañado, 2012). This model has been demonstrated to efficiently close the distance between subject-matter learning and language training. While Lasagabaster and Sierra (2010) contend that organized professional development programs can help to overcome logistical obstacles, Banegas (2022) notes that team-teaching presents such hurdles. This will help to enable more smooth CLIL deployment.

Furthermore, the current Civil Engineering program already uses industry internships and project-based learning to help to embed spoken English practice in real-world professional settings. By using English in practical activities like technical project presentations, lab discussions, and group problem-solving exercises, Fortanet-Gómez (2013) underlines that project-based techniques enable students overcome technical communication barriers. Encouragement of students to present research results in English, defend engineering designs, and explain technical procedures not only improves their oral communication abilities but also guarantees that these skills develop in line with their technical knowledge.

Integration of technology and real learning resources is another important chance to support oral communication development in ESP education based on CLIL. Pérez-Cañado (2018) emphasizes how technical podcasts, virtual lab conversations, and online simulations give students real-world, realistic exposure to spoken technical English, therefore improving their topic knowledge and language ability. In order to close the content-language gap and promote fluency in technical discourse, Dalton-Puffer (2016) similarly emphasizes the value of bilingual teaching resources, guest lectures by foreign professionals, and peer-to-peer technical exchanges. Furthermore, underlined by Fortanet-Gómez (2013) is how much exposure to real-world technical communication via digital platforms and authentic resources helps students to express difficult engineering ideas in English.

In Civil Engineering (Coyle et al., 2010), matching oral communication training with CLIL-based ESP education will greatly improve students' readiness for professional

collaboration, international conferences, and fieldwork communication. Project-based learning, multidisciplinary teamwork, and technology-enhanced education help ESP courses give students the technical and linguistic skills they need to successfully interact in worldwide engineering workplaces.

4) *Structure and Essential Elements of a Civil Engineering Student English Instructional Module Based on CLIL*

To guarantee efficient interdisciplinary learning, the development of a CLIL-based English instructional module for Civil Engineering students at Universitas Pancasakti Tegal calls for a methodical approach combining linguistic and technical competencies. Emphasizing the need of matching the module with the engineering curriculum, both Lecturer 1 and Lecturer 2 let language acquisition coexist with material related to certain disciplines. This is consistent with Coyle et al. (2010), who contend that a well-organized CLIL-based ESP framework helps students to become technically competent and simultaneously acquire language competency. Moreover, Fortanet-Gómez (2013) emphasizes how important it is to include language training into engineering courses so that students may use their language abilities in practical environments.

Targeting fundamental engineering skills including reading technical manuals, analyzing engineering drawings, and presenting professionally, a course description and curriculum analysis shows that the module should be outcome-based. Five main components should make up the module: (1) Oral Communication and Technical Discourse, which emphasizes on speaking and listening skills pertinent to engineering environments, such as presenting technical presentations, engaging in debates, and English language technical concept explanation. Including real materials—engineering case studies, blueprints, industry reports—helps to improve practical relevance and student involvement (Dalton-Puffer, 2016.). Emphasizing technical reports, research papers, and manuals—which are essential for both academic and professional success—reading and writing skills highlight Incorporating industry-specific vocabulary and engineering jargon, (3) Technical Vocabulary and Terminology helps students to properly understand and express difficult technical ideas. Project-Based Learning, which requires students to apply their English abilities to real-world engineering projects including

cooperative problem-solving, technical documentation, and industry-related simulations, therefore promoting both linguistic and technical competencies (Lasagabaster et al., 2014). Incorporating formative assessments, peer reviews, and teacher comments, (5) assessment and feedback helps one methodically monitor student development and guarantee that learning outcomes are attained (Banegas et al., 2020).

Effective application of this curriculum depends mostly on cooperation between language and engineering teachers. Supported by Pérez-Cañado (2018), who stresses that cooperative teaching is vital for ensuring both linguistic and technical aspects are effectively integrated in CLIL instruction, lecturer 1 suggests co-teaching sessions whereby engineering lecturers provide technical input while English lecturers facilitate language acquisition. Furthermore, essential for improving student involvement and understanding is the way digital resources and blended learning strategies are combined. In line with Dalton-Puffer (2016), who contends that real-world materials help close the gap between classroom instruction and practical applications, lecturer 2 advises the use of multimodal resources—such as movies, simulations, and interactive technical documents—to support learning.

Through this methodical approach, the CLIL-based instructional module can assist Universitas Pancasakti Tegal Civil engineering students in developing the language skills required for success in their academic and professional paths. This module naturally includes English into engineering courses, therefore transforming learning from a distinct topic into a more interesting, relevant, and practical one. Through project-based learning, language and engineering teachers working together, and the use of real materials, students will have the confidence to properly convey technical ideas—in industry settings, classroom debates, or international conferences—anywhere. This method guarantees students are not only fluent in English but also ready for the demands of the engineering career by arming them with both language and technical skills.

5) *Most Powerful Tools and Resources for Improving Civil Engineering Students' English Competency*

Incorporating interactive and real-world learning materials inside the CLIL-based ESP framework is crucial to help Civil Engineering students acquire oral communication

skills. Emphasizing the value of exposing students to real-world technical discourse through engineering podcasts, instructional videos, and expert interviews—which give immersion in industry-specific spoken English—lecturer 1 stresses Lecturer 2, meantime, emphasizes project-based learning (PBL) and problem-solving assignments as main approaches for fostering verbal engagement in technical environments (Lasagabaster et al., 2014). Including technical presentations, peer debates, and oral project reports lets students participate in real-world language use, therefore strengthening their capacity to clearly and confidently express engineering ideas (Fortanet-Gómez, 2013).

Still, significant obstacles remain in properly applying these techniques. Often depending much on written modes of communication, lecturer 1 notes that many students struggle with the pronunciation of technical phrases and organizing oral explanations (Hyland, 2016). This is consistent with Belcher (2012), who cautions that the focus of engineering education on writing can impede speech skills, therefore restricting students' capacity to express ideas in professional conversations. Second lecturer notes that conventional lecture-based approaches give little chances for spoken English practice, which causes uncertainty in professional contacts. Both professors support a blended learning model, combining virtual simulations, interactive speaking activities, and role-playing industry scenarios to replicate real-world technical conversation, so overcoming these obstacles (Coyle et al., 2010). Students can also improve their pronunciation, fluency, and technical articulation by use of speech recognition tools, AI-powered chat companions, and real-time feedback software (Banegas et al., 2020).

Lecturer 1 advises a scaffolded speaking curriculum for progressive skill development, in which students start with guided activities (e.g., structured dialogues, recorded explanations) then move to independent speaking tasks (e.g., technical debates, seminar presentations), so guaranteeing steady language acquisition (Coyle et al., 2010). In order to foster oral fluency in both academic and professional environments, Lecturer 2 advises peer cooperation events like group talks on technical advances, Q&A sessions with business leaders, and bilingual study groups (Fortanet-Gómez, 2013). Moreover, formative assessments, peer reviews, and teacher comments are crucial to track student development and guarantee that learning results meet expectations (Banegas et al., 2020).

These approaches will enable Universitas Pancasakti Tegal's Civil Engineering program to equip students with the confidence and skills required to effectively communicate in technical debates, international conferences, and worldwide engineering offices. Learning a language—especially in a specialized subject like engineering—is about feeling comfortable using it in practical circumstances rather than only about acquiring vocabulary. Students who interact with real materials, work with friends, and get feedback that is helpful start to view English as a tool for success rather than as a barrier. Along with improving their language competency, a methodical, technologically advanced approach to CLIL-based ESP education will enable students to share ideas, boldly contribute to the worldwide engineering community, and express themselves.

Conclusion

The results draw attention to a notable disparity in Universitas Pancasakti Tegal's Civil Engineering program, especially with regard to English oral communication instruction for emerging students. Although students show awareness of technical jargon, their capacity to clearly and precisely express engineering ideas is still limited because of inadequate speaking and listening experience. By including Content and Language Integrated Learning (CLIL) into English for Specific Purposes (ESP) programs, research indicates that this gap can be closed by including language training into technical courses. Its successful use is hampered, therefore, by issues including limited multidisciplinary training for teachers and a predominate emphasis on written communication. Essential ways to improve students's technical literacy and communicative competency are suggested as task-based speaking events, real-world industry simulations, and cooperative education between language and engineering teachers.

An organized strategy that incorporates technical discourse, project-based learning, and real-world industry resources will help a CLIL-based ESP module to be implemented successfully connect language learning with engineering curriculum. Digital tools such virtual simulations, expert interviews, and AI-powered language assistants can create immersive experiences enhancing pronunciation, fluency, and confidence in professional communication. Furthermore, assessment techniques combining peer feedback and organized speaking assessments guarantee continuous improvement of skills. Students can acquire both linguistic and technical expertise by encouraging multidisciplinary cooperation and using technology-

enhanced learning, therefore preparing them for worldwide engineering contexts where clear and efficient communication is very vital.

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